



## **Geomorphic monitoring of two dam removals in northern Iberian Peninsula: methodology, results and lessons learned**

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The methodology and results of two dam removals in two different rivers is presented and compared. One removed all-at-once and the second one in a four-stage removal process. Methodology included topographical measurements of the channel, TLS measurements of river bed and bars and sediment grain size and transport. Morphological channel adjustments occurred mainly shortly after dam removals, but with differences among the one removed instantaneously, that was immediate, whereas that conducted by stages that took longer. Degradational processes were observed upstream of both dams, but also aggradational processes (pool filling) upstream of one of them. Flood events reactivated incision and bank erosion, whereas longitudinal profile recovery, grain-size sorting and upstream erosion took longer, especially in that removed in stages, where one year after its total removal its maximum potential erosion attained just the closest reach to the dam and knickpoint upstream migration was still adapting to the new base level position. Lessons learned helped to improve a third in process dam removal geomorphological monitoring, including an improved sediment transport and bank retreat monitoring.